

4.2 M K-Band LEO Satellite Communication Antenna Specifications



1. Features

PR42X / Y-K model 4.2m antenna is designed for K-band LEO satellite communication. The antenna is in the form of dual shaped Ring-Focus

antenna. The main reflector is divided into 12 panels, made with aluminum stretched panel. The feed horn is multi-mode corrugated horn. The feed is optional with TE₂₁ mode mono-pulse auto tracking or program tracking plus step-tracking.

The antenna pedestal is in X / Y type. It is the key performing mechanism to achieve non-blind tracking in zenith. Each axis rotation range is $\pm 90^\circ$, can cover the entire airspace, effectively avoid coiling and collector ring problem in Az/EI structure. This structure is applicable for LEO satellite antenna tracking. The large-size final drive has high structural rigidity ensured the antenna pointing accuracy, tracking accuracy and rotation stability of the overall structure.

2. The main functions:

- a) Have mono-pulse auto tracking, program tracking plus step-tracking, and external data guide tracking modes.
- b) Have time offset adjustment and X, Y axis angle adjustment function in program tracking mode.
- c) Have angle measurement data acquisition function in auto tracking mode;
- d) Can be connected via a network interface or RS-232 serial interface with system monitoring computer, monitors the parameter configuration

of antenna system, control and equipment status.

3. Main specifications:

- 1) Antenna Type: Dual shaped Ring-Focus antenna
- 2) Antenna main reflector diameter: 4.2m
- 3) The main reflector surface accuracy: 0.3mm (RMS)
- 4) Antenna pedestal: X / Y type
- 5) Operating frequency: Rx: 20.2~21.2GHz
- 6) Polarization: circular polarization (LHCP, RHCP simultaneously or switchable)
- 7) Antenna gain: 56.4dBi@20.2GHz
- 8) Side-lobe: The first side lobe level ≤ -14 dB
- 9) VSWR: 1.3: 1
- 10) Axial ratio: 1.1
- 11) System G/T value: 31.4dBK@5 ° EI
- 12) Interface type: WR-42
- 13) Travel range: ± 90 ° (Azimuth and Elevation)
- 14) Travel speed: 0.01 to 5 ° / s
- 15) Travel acceleration: ≥ 5 ° / s²
- 16) Pointing accuracy: ≤ 0.08 °
- 17) Tracking accuracy: mono-pulse auto tracking ≤ 0.03 ° ; program

tracking plus step-tracking $\leq 0.08^\circ$

18) Antenna total weight: $\leq 1000\text{kg}$

19) Rated power: $\leq 7\text{kW}$

20) Working wind speed: 17m/s , gusts of 20m/s

21) Survival wind speed: 56m/s

22) Working temperature: $-40 \sim 55^\circ\text{C}$

23) Relative humidity: 100%

24) Rainfall: 100mm/hr